DOCUMENT RESUME

ED 430 988 TM 029 814

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TITLE Enhancing Students' Motivation To Learn by Matching Conceptual Level with Instructional Type.
PUB DATE 1999-04-00
NOTE 7p.; Paper presented at the Annual Meeting of the American Educational Research Association (Montreal, Quebec, Canada, April 19-23, 1999).
PUB TYPE Reports - Research (143) -- Speeches/Meeting Papers (150)
EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS *College Students; Educational Technology; Group Membership; Higher Education; *Instructional Effectiveness; Student Characteristics; *Student Motivation; Teaching Methods
IDENTIFIERS *Conceptual Level; *Direct Instruction

ABSTRACT

The main effects and interactions of a teacher's instructional methods (direct/nondirect) and students' conceptual levels (high/low) on the students' motivation to learn academic course content were studied with 65 college students in an introductory educational technology class. Students completed a measure designed to indicate their conceptual level and received direct or nondirect instruction according to T. Cicchelli's classification (1983). There was no statistically significant interaction between instructional strategy and conceptual level on students' motivation to learn course content. On the contrary, there was a statistically significant main effect for instructional groups in that students in the nondirect instruction treatment, regardless of conceptual level, demonstrated much higher motivation levels than student exposed to direct instruction. (Contains 2 tables and 10 references.) (SLD)

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# Enhancing Students' Motivation to Learn by Matching Conceptual Level with Instructional Type

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Paper presented at the 1999 AERA Annual Conference in Montreal.



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## Purpose

For years, educators at all levels have sought to maximize students' learning potential by offering instructional strategies which match the students' learning characteristics. One variable often found to influence the success of these matches has been students' motivation to learn. Although many studies have examined motivation as an independent variable (i.e., a relatively stable attribute within the learner), few studies have treated motivation as a dependent variable (i.e., something that may be influenced in order to enhance learning) (Hancock, 1994; Hunter, 1985; Pintrich & Schrauben, 1992; Wlodkowski, 1985). To fill this void in the research, the current study investigated the main effects and interactions of a teacher's instructional methods (direct/nondirect ) and students' conceptual levels (high/low) on the students' motivation to learn academic course content.

In an attempt to replicate the findings of an earlier study (Hancock, 1994) in this area, the current study hypothesized significant increases in students' motivation to learn course content when a direct instruction treatment was experienced by low conceptual level learners and a nondirect instruction treatment was experienced by high conceptual level learners. Three specific hypotheses were examined:

Hypothesis 1. There are no significant differences between high and low conceptual level students regarding students' motivation to learn course content.

Hypothesis 2. There are no significant differences between teachers' direct and nondirect instructional patterns regarding students' motivation to learn course content.

Hypothesis 3. There are no significant interactions between conceptual levels and instructional patterns regarding students' motivation to learn course content.

## Theoretical Framework

Kurt Lewin's early field theory research (Lewin, 1936, 1942) suggested that human behavior is often influenced by both the environment and an individual's characteristics. Subsequent research on aptitude-treatment interactions (Cronbach & Snow, 1977) revealed the positive impact of matching instructional strategies with learner characteristics.

In educational settings, one learner characteristic often found to interact with environmental conditions has been conceptual level (Hunt, Butler, Noy & Rosser, 1978). Conceptual level is an index on one's conceptual complexity (i.e., the ability to discriminate, differentiate, and integrate information) and interpersonal maturity (i.e., self-definition and self-other relations). Using the Paragraph Completion Method test (Hunt, et al., 1978), students may to classified as relatively high or low in conceptual level.

Furthermore, Cicchelli (1983) found that educational settings themselves may be classified by the extent to which the teacher influences the learning process. Specifically, teachers may be very directive (i.e., teacher-centered) or nondirective (i.e., student-centered). A direct instruction environment is one in which the teacher organizes learning tasks, establishes time and methods for instruction, and presents materials according to his or her objectives. A nondirect instruction environment is one in which students influence the organization of learning tasks and establish the time and nature of

instruction while the teacher encourages open exchange of ideas. Using the Instruction Pattern Observation Instrument (Cicchelli, 1983), instruction may be classified as direct or nondirect.

Research has found that motivation to learn course content may be influenced by proper matches between students' conceptual levels and teachers' instructional strategies (Hancock, 1994). One means of measuring motivation, Vroom's (1964) Expectancy Theory, views people as purposeful human beings who interact proactively in their environments based on their expectations that their efforts will result in outcomes they value. In the current study, a version of Vroom's (1964) model was used to measure high and low conceptual level students' motivation to learn course content after exposure to direct or nondirect teaching conditions.

**Methods and Data Sources**

Sixty-five students, enrolled in an introductory educational technology course entitled "Computer Applications in Education" at a large university in the southeast United States, participated in this study. The average age of the participants was 24.37 years with a standard deviation of 6.83. Eighty-two percent of the participants were female and 18 percent were male. The course was designed to teach students computer systems and software for enhancing teaching, learning, and educational management.

Four relatively equal-sized sections of the course were randomly assigned to one of two treatments (i.e., direct or nondirect instruction). Students in all four sections were given the Paragraph Completion Method test (Hunt, et al., 1978) and subsequently classified as high or low in conceptual level. Neither the students nor the instructor were aware of the conceptual level of the participants. In the direct instruction treatment, 16 students' conceptual level scores were above the median and 17 were below. In the nondirect instruction treatment, 19 students' conceptual level scores were above the median and 13 were below.

In five lessons, each 90 minutes over two weeks, the teacher administered the direct and nondirect instruction using scripts designed in accordance with Cicchelli's (1983) Instruction Pattern Observation Instrument. These scripts detailed the specific direct and nondirect behaviors associated with each treatment. The teacher was trained to adhere to the direct or nondirect instructional behaviors.

After the fifth lesson, a version of Vroom's (1964) Expectancy Theory model was used to measure students' motivation to learn course content. Means and standard deviations of motivation levels by conceptual level and instruction pattern were computed.

**Results**

A 2X2 ANOVA, in which the independent variables were students' conceptual levels (high/low) and the teacher's instructional strategies (direct/nondirect) and the dependent variable was students' motivation to learn course content in an introductory educational technology course, was conducted to analyze the data. Table 1 contains the means and standard deviations for the groups on motivation level. Table 2 contains the results of the factorial ANOVA with motivation as the dependent variable.

Insert Tables 1 & 2 about here

With respect to Hypothesis 1, there were no significant differences between high and low conceptual level students regarding students' motivation to learn course content. With respect to Hypothesis 3, there were no significant interactions between conceptual levels and instructional patterns regarding students' motivation to learn course content. However, with respect to Hypothesis 2, there was a statistically significant difference between the direct and nondirect instructional groups regarding students' motivation to learn course content.

**Educational Significance of the Study**

Unlike the earlier research (Hancock, 1994) upon which the current study was based, there was no statistically significant interaction between instructional strategy and conceptual level on students' motivation to learn course content. In other words, this study failed to discover significant increases in students' motivation to learn course content when direct instruction was experienced by low conceptual level learners and nondirect instruction was experienced by high conceptual level learners. On the contrary, the current study discovered a statistically significant main effect for instructional groups in that students in the nondirect instruction treatment, regardless of conceptual level, demonstrated much higher motivation levels that students exposed to direct instruction. These findings may stem from the nature of the content in the course and may offer new insights into the most suitable format for educational technology courses. Specifically, computer courses are traditionally taught in a very direct manner, often using prescriptive, self-paced manuals as the primary vehicle for instruction. The results of the current study suggest that direct instruction, often evidence in technology-based courses, may not maximize students' motivation to learn the course content. On the contrary, the current study suggests that all students, regardless of the manner in which they process information, would experience much higher levels of motivation to learn technology-based course material when exposed to nondirect instructional strategies. Future research could attempt to replicate these findings and explore other ways in which motivation to learn in computer courses may be optimized through the use of less prescriptive, nondirect instruction.

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**Table 1**

Means and Standard Deviations of Motivation Levels by Conceptual Level and Type of Instruction

| Group/Subgroups | M | SD | n |
|---|---|---|---|
| Direct Instruction | 12.19 | 11.13 | 33 |
| Nondirect Instruction | 21.03 | 13.82 | 32 |
| | | | |
| Low conceptual level | 16.31 | 13.52 | 30 |
| High conceptual level | 16.74 | 13.67 | 35 |
| | | | |
| Direct Instruction | | | |
| Low conceptual level | 14.06 | 13.16 | 17 |
| High conceptual level | 10.19 | 8.45 | 16 |
| Nondirect Instruction | | | |
| Low conceptual level | 19.24 | 13.53 | 13 |
| High conceptual level | 22.25 | 14.23 | 19 |

**Table 2**

2X2 ANOVA of Conceptual Level and Type Instruction on Motivation Level

| | SS | df | MS | F | p |
|---|---|---|---|---|---|
| CL | 3.02 | 1 | 3.02 | .02 | .90 |
| Instruction | 1270.94 | 1 | 1270.94 | 6.91 | .01** |
| Interaction | 188.66 | 1 | 188.66 | 1.03 | .32 |
| Residual | 11221.55 | 61 | 183.96 | | |

Multiple R = .317.